RELATIONSHIP OF PERCEIVED CONVENIENCE AND DESIGN OF LEARNING CONTENTS ON DISTANCE LEARNERS IN USM VIA SMS LEARNING TECHNOLOGY

by

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LIST OF ABBREVIATIONS

AVE	Average variance extracted
BI	Behaviourial Intention
CMS	Course Management System
DE	Distance Education
DL	Distance Learners
DT	Distance Teachers
IS	Information System
IT	Information Technology
ITM	Institut Teknologi Mara
ITU	Intention To Use
LMS	Learning Management System
MCMC	Malaysian Communication and Multimedia Commission
MLAM	Mobile Learning Acceptance Model
MMS	Multimedia Message Service
OUM	Open University Malaysia
PDA	Personal Digital Assistant
PEU	Perceived Ease of Use
PLS	Partial Least Squares
PU	Perceived Usefulness
SERQS	SMS Exam Result Query System
SMS	Short Message Service
SN	Subjective Norm
TAM	Technology Acceptance Model
TPB	Theory Planned Behaviour

TRA	Theory of Reasoned Action
USM	Universiti Sains Malaysia
VLE	Virtual Learning Environment
WMD	Wireless Mobile Devices

HUBUNGAN ANTARA TANGGAPAN KEMUDAHAN DAN REKA BENTUK KANDUNGAN KE ATAS PELAJAR JARAK JAUH DI USM MELALUI TEKNOLOGI SMS PEMBELAJARAN

ABSTRAK

Tujuan utama penyelidikan ini adalah untuk mengenal pasti faktor-faktor yang mempengaruhi niat pelajar jarak jauh untuk menggunakan pembelajaran menggunakan telefon bimbit melalui teknologi SMS (*SMS-learning*). Kajian ini telah dijalankan di Pusat Pengajian Pendidikan Jarak Jauh, Universiti Sains Malaysia berdasarkan 51 sampel pelajar jarak jauh yang mempunyai pengalaman menggunakan pembelajaran-*SMS (SMS-learning)* dalam program pembelajaran jarak jauh masing-masing. Model Penerimaan Teknologi (*Technology Acceptance Model)* digunakan sebagai rangka kajian; ditambah dengan dua pemboleh ubah luaran yang dicadangkan: reka bentuk kandungan *SMS-learning* dan tanggapan kemudahan pembelajaran-*SMS*. Kajian ini dilaksanakan menggunakan kaedah penyelidikan tinjauan dalam talian yang menggunakan soal selidik dengan teknik skala Likert 5-mata. Hasilnya yang dianalisis menggunakan teknik Ganda Dua Terkecil Separa *(Partial Least Squares)*, menunjukkan bahawa perhubungan yang kuat wujud antara reka bentuk kandungan pembelajaran-*SMS* dengan tanggapan senang guna (β = 0.299, p < .05), antara tanggapan kemudahan dan tanggapan senang guna (β = 0.652, p < .05), dan juga antara tanggapan kemudahan dan tanggapan kebergunaan (β = 0.369, p < .05). Kajian ini juga mendapati hubungan yang signifikan antara tanggapan senang guna dan tanggapan kebergunaan (β = 0.405, p < .05), dan juga hubungan yang boleh dipercayai antara tanggapan kemudahan dan niat untuk menggunakan (β = 0.582, p < .05). Bagaimanapun, oleh kerana kekurangan bukti

untuk menyokong hubungan-hubungan alternatif, keputusan yang diperoleh menunjukkan tiada hubungan yang signifikan antara reka bentuk kandungan dengan tanggapan kebergunaan, antara tanggapan senang guna dengan niat untuk menggunakan, antara tanggapan kebergunaan dan niat untuk mengguna, dan juga antara reka bentuk kandungan dengan niat untuk menggunakan. Nilai R^2 menunjukkan bahawa dua pemboleh ubah ramalan: tanggapan kemudahan dan tanggapan kebergunaan menjelaskan 77.2% varians dalam niat pelajar jarak jauh untuk menggunakan pembelajaran-*SMS*. Keputusan ini mengimplikasikan bahawa pembelajaran menggunakan telefon bimbit melalui teknologi *SMS* sangat disokong selagi ia memberi kemudahan dan kebergunaan kepada penggunanya. Di samping itu, kajian masa depan bolehlah membuat penyiasatan mendalam tentang reka bentuk pengajaran pembelajaran-*SMS* untuk mencari reka bentuk yang paling berkesan bagi pengajaran dan pembelajaran.

RELATIONSHIP OF PERCEIVED CONVENIENCE AND DESIGN OF LEARNING CONTENTS ON DISTANCE LEARNERS IN USM VIA SMS LEARNING TECHNOLOGY

ABSTRACT

The primary purpose of this study was to investigate the factors that influence distance learners' intention to use mobile learning via SMS technology (SMS-learning). The study was conducted in the School of Distance Education, Universiti Sains Malaysia based on a sample of 51 distance learners having the experience of using SMS-learning in their respective distance learning courses. The study employed the Technology Acceptance Model as a research framework, extended with two proposed external variables: the design of SMS-learning content and perceived convenience of SMS-learning. The study was conducted using online survey research methodology employing questionnaires with a 5-point Likert scale technique. The results which were analysed using Partial Least Squares technique, revealed that strong relationships existed between design of learning contents and perceived ease of use (β = 0.299, p < .05), between perceived convenience and perceived ease of use (β = 0.652, p < .05), and between perceived convenience and perceived usefulness (β = 0.369, p < .05). The study also discovered a significant relationship between perceived ease of use and perceived usefulness (β = 0.405, p < .05), and reliable relationship between perceived convenience and intention to use (β = 0.582, p < .05). However, due to insufficient evidence to support the alternatives, the results showed that no significant relationship between design of learning contents and perceived usefulness, between perceived ease of use and intention to use, between perceived usefulness and intention to use, and also between

design of learning contents and intention to use. The value of R^2 further revealed that the two predictor variables: perceived convenience and perceived usefulness explained 77.2% of the variance in distance learners' intention to use SMS-learning. This implies that mobile learning via SMS technology is highly endorsed as long as it provides convenience and usefulness to the users. Besides, future studies could make an in-depth investigation of the SMS-learning instructional design to find the most effective design for teaching and learning.

CHAPTER 1

INTRODUCTION

1.0 Research Background

Distance learning is not new in Malaysia. According to Hisham and Rozhan (2003) it is a concept that is made up of two words, distance and learning, and entails the state of being apart, separation or remoteness in the relationship between distance learners (DLs) and the distance teachers (DTs), other DLs and the course contents. Hisham and Rozhan believe that as the debate continues, it seems that no consensus will be found between distance education researchers and enthusiasts, as far as the term distance learning is concerned. The field is continuously changing and evolving.

The impact of new technologies that is growing rapidly at present is affecting many sectors, including the field of education. The evolution of the Internet application especially, has invented new ways of communication between educators and learners in the educational system, especially in higher education institutions (Issham & Rozhan, 2009). This evolution has incorporated the classical way of teaching into virtual learning environment as well as e-learning application. It allows learners to learn anywhere, usually at anytime, as long as their computers are properly configured.

Universiti Sains Malaysia was conferred the unique distinction of offering courses for part-time students when it was established in 1969, thus pioneering distance learning in the country in 1971 (Issham et al., 2010a).

However, only few Malaysians took advantage of this mode of learning (Raghavan & Kumar, 2007). At that time, the delivery mechanism in the teaching and learning process also evolved from the use of the basic self-instructional text to audio and video conferencing to the current use of the electronic portal and numerous web 2.0 tools (Issham et al., 2010a).

USM's Distance Learning Programme has used the E-learning Portal as a medium of teaching and learning through a home-grown electronic portal in 2003 followed by a full migration into Moodle in 2005 (Issham et al., 2010b). Moodle is a Course Management System (CMS), also known as a Learning Management System (LMS) or a Virtual Learning Environment (VLE), a free web application that educators can use to create effective online learning site. This software package has been known to produce Internet-based courses and web sites, as it is a global development project designed to support a social constructionist framework of education (Moodle, 2010). More so, the portal has become an essential tool for both administrative and learning support (such as forum, chat and lecture notes), and it is being used actively by both lecturers and students.

Today, Distance Education (DE) calls upon an impressive range of technologies to enable DTs and DLs, who are separated by distance, to communicate with each other in real time (synchronous) and delayed time (asynchronous) (Hisham & Rozhan, 2003). Thus, DLs can access education and learning opportunities at a time, place, and pace to suit their individual lifestyles, learning preferences and personal development plans (Hisham & Rozhan, 2003). Such separations, therefore, give rise to "an impressive and

innovative array of media mixes, resulting in the application of technology in education" (Rozhan & Habibah, 2000). According to Hisham and Rozhan, such development offers a radical new direction for DE enthusiasts, teachers, and learners in distance education. Thus, they incorporated flexible and open learning methods modified and created special learning resources.

However, mobile technology also has taken their place in offering the use of new technologies to students. Evans (2008) outlined that mobile learning (m-learning) inherits advantages from e-learning, but extends their reach by making use of portable wireless technologies. IPods, MP3 players, PDAs and mobile phones are some examples of mobile technologies. Several advantages inherent in m-learning over Internet have been identified (Attewell, 2005a). Especially, m-learning

- helps learners improve literacy and numeric skills.
- helps learners to recognize their existing abilities.
- can be used for independent and collaborative learning experiences.
- helps learners to identify where they need assistance and support.
- helps to overcome the digital divide.
- helps to make learning informal.
- helps learners to be more focused for longer periods.
- helps to raise self-esteem and self-confidence.
- is portable to be carried from one place to another.
- is more wide spread and popular than Internet.

- does not need much technological prerequisites.
- cost is pretty affordable comparatively; there is less recurring costs and one-time investment.
- provides real time and location independence.

Theoretically, it is important to understand the meaning of "mobile learning," as according to Issham et al. (2010a), it is a way of establishing a common understanding, a way of exploring the evolution and direction of m-learning**.** In the earlier approaches, efforts to define m-learning, focused more on the mobility of the technology (Quinn, 2000; O'Malley et al., 2003; Keegan, 2005) or on the technology alone (Traxler, 2005), while Parsons (2007) believed that m-learning describes any form of education or training that is delivered using some kind of mobile device. Another view of m-learning says it is the facilitation of learning and the delivery of educational materials to students using mobile devices via wireless medium (Lawrence et al., 2008). However, there has been also definitions that attempt to identify and define m-learning as certainly not simply the combination of "mobile" and "learning". According to Traxler (2009), implicitly, m-learning has always meant "mobile e-learning" and its history and development have to be understood. Thus, many wider issues need to be addressed in terms of explaining, understanding, and conceptualizing the concept of m-learning.

According to Traxler and Kukulska-Hulme (2005), m-learning has developed mainly in Europe, the United States, and some parts of East Asia, while English is used as the primary medium, and in an environment of

ongoing, rapid investment, and advancement in technology. They also emphasized that m-learning has been formed by the specific ideas of teaching and learning; specific relations between teacher, student and subject; and the specific roles for different educational institutions, found in the societies and institutions it has evolved in. M-learning might sound impracticable to improve education successfully, except only if its use is comprehensively analyzed and modified to suit each new setting. A faculty member of University of Michigan, Elliot Soloway, points out that although many schools think that laptops are the solution, he still believes that mobile phone will be the tool of the future in education (Classic ScobleShow, 2007). His argumentation is based on the situation at present, when kids are now dealing with mobile computing; and soon hundred percent of students will have mobile phones.

Malaysia was also exposed to this evolving technology. According to the Malaysian Communications and Multimedia Commission's (MCMC, 2010b) Hand Phone Users Survey 2008, as of 31 March 2008, there were almost 24.3 million hand phone subscriptions on the seven digital networks operating in Malaysia. Facts and figures recently published in MCMC, showed that there were 30.3 million cellular phone penetrations in the fourth quarter of 2009. Meanwhile, in the first quarter of 2010, the rate experienced almost a two percent growth and a penetration rate of 108.1 percent nationwide (Malaysian Communications and Multimedia Commission, 2010a). This shows that there has been an increase in the usage of mobile technologies by Malaysians, especially, in the usage of hand phones. As expected, MCMC (2010b) reported the hand phone user

base continues to be characterised by the younger generation, since the highest number of hand phone users are in the 15 – 19 age group, which accounts for almost 20 percent of all users in 2008. This is followed by the second largest age group of 20 – 24, which constitutes 16 percent of the total users. Although almost 30 percent of the hand phone users are in the age group of 40 and above, still the data showed that teenagers and adults are dominating the Malaysian mobile technologies market.

In addition, m-learning devices and components are becoming more credible and cost-effective, which would be contributing to the provision of distance learning. Nevertheless, even with its limited experience, it is adaptable to an institution's needs and situation (Traxler & Kukulska-Hulme, 2005). Therefore, in developing countries such as Malaysia, mobile technology can possibly deliver education without relying much on extensive traditional communication infrastructure, and as a result, it may reduce costs of installing extensive electricity power grids and building multiple computer labs in educational institutions.

Attewel and Gustafsson (2002) found that many years ago in many European countries, basic literacy, and numeracy skills failed to be delivered to many people especially young adults. They further explained that the International Adult Literacy Strategy found substantial literacy problems in all the countries studied, including the UK. These countries had rates of functional illiteracy of 20% or more, and their innumeracy levels were much worse. In reality, similar problems were also found in most countries around the world. The traditional teaching mechanisms using thick

textbooks, revision lectures, and lecture notes can easily create conditions of boredom and demotivation in the class or lecture rooms (Didden, 2006).

Typically, in the traditional classroom, students can focus and pay attention on lectures only at the beginning of the class, before they start losing focus, feeling sleepy or getting bored. As a result, many young adults are not willing to participate in posteducation, in fear of experiencing a repeat of the same situation, and ending up losing their interests and enthusiasm towards education (Attewell & Gustafsson, 2002). This unresolved issue should be determined in view of the new and advanced mechanism that can be used to improve both teaching and learning. There is no doubt that almost everyone has at least a hand phone, especially the young adults. According to Attewell (2002), this device can be used to engage them in some small learning activities which may lead to more extensive and continuous involvement in learning later.

Uniquely, m-learning provides the opportunity for learners to vary their study location and to study “on the move” which enables them to study whilst travelling on transport (Evans, 2008). According to his study, the use of portable technologies makes it simpler for learners and educators to transmit their teaching and learning materials when and where they want. Moreover, he also explained that since learners normally have their devices with them, it also facilitates “just-in-time” learning where learners can often take advantage of unexpected free time to study and make revision. These are some features that distinguish m-learning from e-learning, since e-learning requires access to a computer and Internet. The use of m-learning

may possibly reduce the overhead costs experienced by the learner to search, locate, and retrieve materials which would otherwise be time consuming.

SMS, commonly referred to as "text messaging," is defined as a service for sending short messages of up to 160 characters to mobile devices, including cellular phones, Smartphone and PDAs (Lekkad, 2010). SMS is similar to paging, however according to Lekkad, what makes SMS messages distinct from paging is that it does not require the targeted mobile phone to be active and within range. In addition, if the target phone is inactive, the message will be kept in hold for a number of days until the phone is active and within range. Moreover, it is capable of transmitting the message within the same cell or to anyone with roaming service capability. Lekkad added that SMS or text messaging has replaced talking on the phone for a new “thumb generation” of texters; and Rozhan (2009) agreed that the use of SMS has become an essential part of a student’s life. In addition, as reported by Lukman Hakim (2010) in *Kosmo* on 14 April 2010, in the previous year, almost 80 billion SMS and MMS were sent by mobile phone users in Malaysia. This shows that the number has increased by four times compared with 2008; therefore, it makes sense to use it as a teaching gadget.

However, it is becoming increasingly difficult to ignore the sort of perceptions people will have if this new way of teaching and learning, using mobile technologies is used, since understanding why people accept or reject computers has proven to be one of the most challenging issues in information system research (Swanson, 1988). Yordanova (2007) has

already drawn attention to one of the most important problems related to the use of mobile technologies in education, that is, the problem of acceptance. Yordanova further explained that young people have very well accepted the idea of wireless technologies integration and use of mobile devices in the process of learning. These technologies are very well known for their functionalities and capabilities; and have provided the flexibility and mobility that students need in their learning. This is the basic advantage of this new form of education. Nevertheless, some of the older users often encounter problems when they have to use mobile devices in doing their work or in their education (life-long learning).

1.1 Research Problem

The E-learning Portal has become a medium of teaching and learning in the USM Distance Learning Programme through a home-grown electronic portal in 2003, which was then followed by a full migration into Moodle in 2005 (Issham et al., 2010b). Moodle is a software package known to produce Internet-based courses and web sites as it is a global development project designed to support a social constructionist framework of education. More so, the portal has become an essential tool for both administrative and learning support (such as forum, chat and lecture notes), and it is being used actively by both lecturers and students.

Actually many studies have investigated learner's perspectives on online learning which particularly addressed the strengths and weaknesses of online learning (Brown & Voltz, 2005; Chizmar & Walbert, 1999; Gilbert et al., 2007; Hara & Kling, 1999; Hunjak & Begkicevic, 2006;

Issham et al., 2010b; Murphy & Collins, 1997; Petrides, 2002; Poole, 2000; Schrum, 2002; Serce & Yildirim, 2006; Song et al, 2004; Vonderwell et al., 2007). Most of them reported that the strengths of online learning are its convenience (Murphy & Collins, 1997; Poole, 2000; Song et al., 2004) and its flexibility (Chizmar & Walbert, 1999; Petrides, 2002; Schrum, 2002). Students claimed that they participated in online discussions at times most convenient to them, and they accessed course materials mostly from their home computers, the place most convenient for them (Poole, 2000). Besides that, online learning offered them flexibility as it was easier to work in collaborative groups in an online course without having to rearrange everyone's schedule as one might have to do in a traditional face-to-face course (Petrides, 2002). In addition, the ability to freely pick and choose from the menu of diverse learning experiences enabled the participants to find the approach that best fits the way they learn (Chizmar & Walbert, 1999).

However, there are still hesitations and instabilities in online learning which may discourage students to use the E-Learning Portal. Response delay is reported to be the main concern in online learning (Hara & Kling, 1999; Petrides, 2002; Song et al., 2004; Vonderwell et al., 2007) since the students claim they felt the lack of immediacy in obtaining responses in the online context, compared with what could typically be obtained in a structured face-to-face class discussion (Petrides, 2002). As a result, they felt frustrated (Hara & Kling, 1999). Song et al. took a similar view, saying students who were less satisfied with online learning felt the lack of community atmosphere within the online environment, they have difficulty

understanding the goals or objectives of the course, and they face technical problems. More so, technological base and technical requirements faced by students and teachers have become a weakness in e-learning (Issham et al., 2010b; Kyong-Jee et al., 2005). Song et al. (2004) commented with a similar argument saying, the biggest challenge reported in applying online learning was technical problems.

Schmidt (2005) stated that e-learning approaches provide very sophisticated ideas for improving the learning process. However, its focus on didactically well-founded learning materials with rich media content and complex interaction profiles makes it impractical. He added that while it is true that a clear didactical approach and rich learning programs facilitate the learning of the individual significantly, e-learning approaches have so far not been able to solve the problem of producing these kinds of materials. Tutors are pedagogically and didactically trained persons while learners typically are not. This situation therefore, revealed one clear problem which is the feeling of inadequacy of technological skills (Hisham & Rozhan, 2003).

Nurhizam (2007) conducted a research on the empirical evaluation of e-learning usability towards motivation to learn among learners from Open University Malaysia (OUM). He found that the issue in e-learning thus far has been more on the problems of technology rather than of the quality of learning. He suggested that the focus was mainly on the “e” rather than on the “learning” part, resulting in learners becoming demotivated. Therefore, the use of mobile phone as a learning tool can possibly contribute to

encourage learning as well as the motivation to learn. A preliminary study was conducted by Issham and Rozhan (2009) on the second year physics optics course in distance education at Universiti Sains Malaysia and has received overwhelming agreement and positive responses from the students, which may prove that the mobile phone could make a strong and viable contribution to the educational transaction in a physics course in distance education.

Rau et al. (2008) emphasized that the impact of using mobile communication technology to spread learning materials and increase informal interaction has been rarely studied. Further, they also suggested for m-learning to be better used as an extension to current learning tools; but the way to implement m-learning tools effectively still needs to be explored empirically. Besides that, Issham et al. (2010a) suggested there is no problem to imply SMS-learning as an extension to the existing learning mechanism, provided that the system must be usable and useful to gain acceptance from its users.

For that reason, to better predict, explain, and increase user acceptance, it is crucial to understand why people accept or reject information system (Singh, 2005). As noted by Davis et al. (1989),

> ...practitioners and researchers require a better understanding of why people resist using computers to devise practical methods for evaluating systems, predicting how users will respond to them, and altering the nature of systems to improve them and their processes of implementation. (p. 982)

Therefore, this study will look into the design of learning contents, convenience, usefulness, and ease of using mobile learning as factors that will influence distance learners acceptance to use it.

1.2 Objectives of the Study

The general objective of this study is to investigate the factors affecting distance learner's intention towards using SMS-learning. Specifically, this study attempts to achieve the following objectives:

1. To identify whether there is any significant relationship between the designs of learning contents and perceived usefulness of SMS-learning.

2. To identify whether there is any significant relationship between the designs of learning contents and perceived ease of use of SMS-learning.

3. To identify whether there is any significant relationship between perceived convenience and perceived ease of use of SMS-learning.

4. To identify whether there is any significant relationship between perceived convenience and perceived usefulness of SMS-learning.

5. To identify whether there is any significant relationship between perceived ease of use and perceived usefulness of SMS-learning.

6. To identify whether there is any significant relationship between perceived ease of use and intention to use SMS-learning.

7. To identify whether there is any significant relationship between perceived usefulness and intention to use SMS-learning.

8. To identify whether there is any significant relationship between perceived convenience and intention to use SMS-learning.

9. To identify whether there is any significant relationship between design of learning contents and intention to use SMS-learning.

1.3 Research Questions

This research is conducted mainly to examine the factors influencing the intention towards using new technology introduced particularly to distance learners. According to Dzakaria and Rozhan (2003), a few years back, distance education made calls upon impressive range of technologies to enable distance learners and distance teachers who are physically separated by distance to communicate with each other in real time and delayed time. Therefore, such expectation has triggered the idea of introducing a medium-assisted learning to distance learners using mobile phones in the form of Short Message Service (SMS) text to convey learning contents. For years, one of the dominant research perspectives within the technology acceptance literature has relied on the Technology Acceptance Model (TAM). According to Lee et al. (2009) and Venkatesh et al. (2003), TAM has been the most frequently cited and influential model for understanding the acceptance of information technology and has received

extensive empirical support. Therefore, the model has contributed in eliciting and prompting some questions in this research.

Since TAM proposed external variables as the basis for tracing the external factors on two main internal beliefs, perceived usefulness and perceived ease of use, this research recommended another two variables narrating mobile learning as a new tool of learning, namely the design of learning contents and perceived convenience.

According to Traxler (2009), with mobile devices, there is a concern that they sever up vast amounts of information and knowledge into small disconnected and trivial chunks. Furthermore, he added that clearly these different formats must each have an effect on information and on knowledge in their different ways, on what is accessible, and what is valued. Thus, design of learning contents is a vital variable which should be incorporated in this study as a factor contributing to learner's intention to use SMS-learning.

Using text messages to deliver information or learning contents offered convenience to the users as it produce the benefits of being able to get small amounts of information easily and quickly (Lawrence et al., 2008). Therefore, this study will try to answer the following research questions which reflect the issues raised:

1. Is there any significant relationship between the design of SMS-learning contents and perceived usefulness of SMS-learning?

2. Is there any significant relationship between the design of SMS-learning contents and perceived ease of use of SMS-learning?
3. Is there any significant relationship between perceived convenience and perceived ease of use of SMS-learning?
4. Is there any significant relationship between perceived convenience and perceived usefulness of SMS-learning?
5. Is there any significant relationship between perceived ease of use and perceived usefulness of SMS-learning?
6. Is there any significant relationship between perceived ease of use and intention to use SMS-learning?
7. Is there any significant relationship between perceived usefulness and intention to use SMS-learning?
8. Is there any significant relationship between perceived convenience and intention to use SMS-learning?
9. Is there any significant relationship between design of learning contents and intention to use SMS-learning?

1.4 Research Hypotheses

The purpose of this study is to find out whether or not design of learning contents affects perceived usefulness, and perceived ease of use. Also, this study seeks to find out if the convenience of using the innovation mediates their perception of usefulness and ease of use of new information system. Based on the model in Figure 1.2, several directional hypotheses were tested.

Based on prior research on design of learning contents and users' perception of ease of use and usefulness (Lee et al., 2009), design of learning contents was expected to have a positive perception of the system's ease of use and its usefulness. In other words, the development and design of learning contents that fit students' needs are expected allow for the students to have a higher perception of its ease of use and its usefulness. In this construct, the design of learning contents is regarded as the independent variable and perceived ease of use and perceived usefulness are the dependant variables. On this basis, the following hypotheses were proposed:

H_{01}: Design of learning contents has no relationship with learner's perception of usefulness.

H_{02}: Design of learning contents has no relationship with learner's perception of ease of use.

Users' perception of a new information system's ease of use and its usefulness is directly proportional to their perceived convenience of using the innovation (E. & Chihui, 2009; Yoon & Kim, 2007). Cheolho and Sanghoon (2007) revealed the wireless mobile technologies are expected to provide convenience to people through their intelligence and intercommunication capabilities in the background of people's lives. Thus, perceived convenience would be considered as a silent determinant of the individual's acceptance and use of IT (E. & Chihui, 2009). Furthermore, previously Davis (1989) proposed an instrument to measure "perceived usefulness" in order to "accomplish tasks more quickly." Hence, Yoon and Kim (2007) inferred in their studies that there is a positive relationship

between perceived convenience and perceived usefulness. Users who feel convenient using the innovation are expected to perceive the new information system to be easier to use and more useful. Therefore, the following hypotheses are formulated.

H_{03}: Perceived convenience has no relationship with learner's perception of ease of use.

H_{04}: Perceived convenience has no relationship with learner's perception of usefulness.

This research expects to find a positive relationship between perceived ease of use and perceived usefulness with user acceptance, therefore revalidating Davis's model (1989). User acceptance in this research is operationalized similar to Davis's original research where intention to use the IS was a measure of system acceptance. Also, consistent with Davis's work, perceived ease of use is expected to influence perceived usefulness.

H_{05}: Learner's perceived of ease of use has no relationship with their perceived of usefulness.

H_{06}: Perceived ease of use has no relationship with learner's intention to use SMS-learning.

H_{07}: Perceived usefulness has no relationship with learner's intention to use SMS-learning.

Previous literatures showed that there was no significant impact between perceived convenience and intention towards using new technology (E. & Chihui, 2009; Yoon & Kim, 2007). However, this study believes that

perceived convenience will have a positive impact on the intention towards using SMS-learning, since mobile phone provides convenience to the users through its intelligence and intercommunication capabilities in the background of people's lives. Moreover, design of learning contents is also believed to have a relationship with intention to use SMS-learning, hence it is crucial to find out if the messages delivered are understandable and appropriate, to influence the users to be more inclined to use the SMS-learning. For these reasons, the following hypotheses were formulated.

H_{08}: Perceived convenience has no relationship with learner's intention to use SMS-learning.

H_{09}: Design of learning contents has no relationship with learner's intention to use SMS-learning.

In line with the statement of problem, the objectives of the study, research questions, and the focus of the study, this study posited these hypotheses which will be tested at significance level of .05.

1.5 Importance of the Study

The importance of this study is to introduce a new mechanism of learning using the mobile phone. The focus of this study will be on the use of Short Message Service (SMS). It is important to see whether SMS can be used or implemented as a system to support convenient learning amongst distance students in Universiti Sains Malaysia. It is essential to see how students perceive the use of SMS as a learning mechanism. Therefore, this study may be important to enable distance teachers and distance learners

who are separated by distance to communicate with each other either synchronously or asynchronously. In this case, it will fit the proposition by Hisham and Rozhan (2003) that the learners can access education and learning opportunities at a time, place, and pace to suit their individual lifestyles, learning preferences and personal development plans.

Evans and Gibbons (2007) and Evans et al. (2004) suggested that through such effects as interactivity and personalization, learner engagement and receptivity can be enhanced. They claimed that this is due to the reason that in conventional classrooms students only have access to textbooks or lecture notes while the lecturer has access to the Internet. The major problem with conventional classrooms is that some students might forget to bring their textbooks or lecture notes, thus rendering unable to follow the class without their learning materials (Singh & Zaitun, 2006). This study supports the effects of interactivity and personalization, which will result in great advantage on distance learners since they are well-known for facing scarcity in terms of time and place because they have commitments in their jobs.

Moreover, as much as mobile learning can be an essential tool for learning support where it can be used actively by both lecturers and students, it can also become an important tool for communicating administrative matters because students can be reached conveniently with messages for alerts, reminders, and official matters particularly matters associated with distance learning. In addition, with appropriate research being conducted and the mobile learning system being properly developed,